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CONTRIBUTED ARTICLES

Moving Bees to the Basswood Bloom.

BY G. M. DOOLITTLE.

A correspondent writes me that he wishes to fix during the winter, for moving his bees some 10 or 12 miles to where there is plenty of basswood timber, he having none nearer than that to his bees, hoping thereby to receive a larger amount of honey from his apiary than he would by allowing it to remain in one place, as he has formerly done; and he wishes me to tell through the columns of the American Bee Journal what I think of the idea. He also wants to know if there are any seasons when basswood blossoms in profusion, when there is no nectar secreted in the blossoms; and finally asks if the blossom-buds are not formed on the trees a little previous to the time of their opening, so that he can tell whether there will be enough prospect of bloom to pay him for moving his bees.

I have often wondered why more people did not think of moving their bees to the basswood flow, when they were so situated that such flow was beyond the range of their bees' flight, for I can see nothing against such a course, except the expense. From the experience of the last 30 years, I believe basswood to be one of the greatest honey-producers in the world, if not the greatest. I have secured a yield of 22 pounds of honey a day from it for three days, and reports of 20, 15 and 10 pounds daily have frequently been reported from this source during a series of days, while this beautiful tree was in blossom. If I mistake not, no such yields have been reported for any length of time from any other honey-producing plant or tree, altho there may have been reports of 20 pounds from other sources for a single day.

Where bees can be moved to the basswood and returned, at an expense of \$1.00 per colony, it will be seen that 10 pounds of honey from each colony will pay the cost, counting honey at a reasonable figure, if they should secure that surplus in sections. By going back over my diary, kept during the time I have kept bees, beginning with the year 1869, I find that my average from basswood has been not far from 45 pounds of comb honey per colony each year. So if we call 45 pounds what we may expect one year with another from basswood, and if it costs 10 pounds of that for moving the bees to the basswood, we shall have 35 pounds left for profit; or calling the honey at 10 cents per pound, as above, it would give us \$3.50 per colony as clear money on each colony, over what we should have had if we had not moved them. Thus we see, if we move 100 colonies we shall have \$350 free of all expense for our undertaking, which is no small or mean sum.

Taking up the next part of the matter presented by our correspondent, I will say that I never knew a season when basswood did not furnish some honey. The shortest season that I ever knew gave a three days' yield, in which honey was so plentiful that the bees could not prepare room fast enough to store it, with a gradual tapering off of two days more,

making five days in all. The longest gave a yield of 25 days, with three of them so cold that the bees could not work, except a little in the middle of the day. The State of the atmosphere has much to do with the secretion of nectar in the basswood flowers. The most unfavorable weather is a cold, rainy, cloudy spell, with the wind from west to northeast. If basswood came at a time of year when we were liable to have much of such weather, there might be such a thing as an entire failure of honey from it. But, as a rule, we have very little such weather at this time of year.

The condition the most favorable for a large yield of nectar is when the weather is very warm and the air filled with electricity. At times when showers pass all around, with a great display of lightning, yet no rain falls in our immediate vicinity, the honey will almost drop from the blossoms; and even when light showers are present nearly every day, I have known bees to store honey very fast. At these times of greatest yield I have seen nectar in the blossoms after they have fallen to the ground, so that it sparkled in the morning sunshine.

Then, this nectar is nearly the consistency of honey, and not like sweetened water, as in clover, teasel, buckwheat, etc., which makes basswood doubly valuable over most other honey-secreting plants and trees. One bee-load of nectar from bass-



Prof. Lawrence Bruner.—See page 772.

wood in a dry, warm time is equal to three from white clover or buckwheat, or five from teasel, and some of the other honey-producing flowers. I have taken two or three stems of basswood blossoms, when the yield was great, and jarred them over the palm of my hand, when I could turn two or three drops of nice honey out of the hand.

All of these things point toward a success in moving bees to a basswood locality, above what it would be to try to do the same when other blossoms were to be the source from which honey was to be secured.

Replying to the last question, I will say that the fruit-buds and leaflets of all trees with which I am familiar are formed in June and July of the preceding year; so the result of next year's honey-yield, so far as buds and flowers are con-

cerned, is assured nearly or quite a year previous to their expanding. After being formed they remain dormant till the warmth of the next spring brings this dormant life into growth. As soon as the buds unfold, the latter part of May, then we can see and know whether we should move the bees or not.

By examining closely, as soon as the buds unfold so that we can see the miniature leaves, we can find the bunch of basswood buds at the base of each tiny leaf, curled up and looking very much like a small, fuzzy worm. With each week this bunch of buds grows, until at the end of about seven weeks from the time the trees put on their green in the spring, they open their flowers, filled with nectar to invite the bees to a sumptuous feast.

Of course, a cool season will retard the time of blossoming a little, and a hot season advance it; but the above is the rule.

Thus the practical eye can tell nearly two months in advance as to the promise for a yield of basswood honey, as far as blossoms are concerned; and no bee-keeper should consider that he has gone beyond the stage of "swaddling clothes" till he is familiar with all of these things, the knowledge of which goes to make up the "full statured" man or woman in this fascinating pursuit.

Onondaga Co., N. Y.



Rendering Wax from Honey-Cappings.

BY J. K. DARLING.

I have read the question by "Jamalca," on page 725, also Dr. Miller's reply, and it appears to me that I might help a little with these difficulties. As Dr. Miller says, I believe a large solar extractor would suit better than anything else, but that is not quite enough to get all the wax, altho it will take out the wax as clean or cleaner than any other process I know of without applying pressure.

If "Jamalca" will get a properly-constructed solar extractor and manage it rightly, he will not be bothered very much with flying bees, and will obtain a good grade of honey that some of his customers will prefer to that taken with the honey extractor, for altho it may be perceptibly darker, it is very heavy in body, and of good flavor; and he will also obtain a grade of wax that he need not be afraid or ashamed to place in competition at any of the fairs, and no need to remelt or clarify it, either, as the extractor "is so constructed that it will at one operation effectually separate wax, honey and refuse," and there is no need for the honey and wax to go "into the first receptacle until it is filled, and overflows into the second, and that into the third, and so on," as there is only one pan for both honey and wax in which they separate themselves. The refuse never gets there. I have one that I made for myself, modified after the style of one known as the "Alpaugh Extractor," and I would not take \$25 for it, if I could not make or buy another.

I am not bothered with too much heat here on the 45th parallel, but on the contrary I am bothered at times because I do not have heat enough, altho the lid is double glass, $\frac{1}{2}$ inch space.

If one wishes to save all the wax, it will be necessary to have some kind of a press to take the wax out of the refuse, as I do not believe that any steam extractor, or solar extractor, or hot water process, will take the wax all out of the refuse without pressure. I believe that one of our most wide-awake and progressive bee-keepers, Mr. F. A. Gemmill, has constructed a press that as an adjunct to the solar extractor will leave little to be desired, and it does not work inside a vessel containing hot water, either, if I understand the description.

I may say that my first prize wax for the last two seasons was from the solar wax extractor without remelting, and I did not see any better at the Industrial Exposition at Toronto, or the Central Canada at Ottawa.

Lanark, Co., Ont., Canada.



No. 5.—The Care of Bees for Wintering.

BY C. P. DADANT.

I believe the question of shelter, in out-door wintering, is of more importance than generally believed. Tho it is true that in some instances, colonies have been known to winter safely, when exposed to the fierceness of the winds, these exceptions, instead of weakening the rule, can only strengthen it, for it will always be found that the circumstances otherwise were most favorable, where the results were so unexpectedly good.

In a natural state, the bees which are hived in hollow

trees can hardly be used as a safe criterion, for we have no manner of knowing how many or how few such colonies winter safely in this climate, but even if it could be proven that they generally succeed, the fact that their abode is usually at only a short distance from the ground, and in thick timber, where the force of the wind is lightly felt, and the additional fact that the body of the trunk which they inhabit is very thick, much thicker than our improved hives, would still indicate that some shelter is advisable. The straw hives formerly used by the old apiarists of Europe were certainly very good abodes, as far as winter protection was considered; for they were very thick, and the material used is one of the best non-conductors of heat or cold. But it is out of the question to make such hives to-day, or at least to put them in use in a practical way; so we must see what we can do with the ordinary movable-frame hives.

Double-wall hives are very good for winter, especially when they have a dead-air space between the two walls. They are exposed to two weighty objections. The first is that, in the warm days, or in early spring, they are not readily and quickly warmed by the first rays of sunshine, and the bees in them will be less readily induced to take a flight. The other defect is their cost. Few bee-keepers will adopt them because of the expense involved in the purchase of such hives. This objection should have no weight with a practical man, who will readily figure that the first cost of a hive is a trifle, when he considers the time of its usefulness, which may be reckoned, if the hive is well made and well painted, not less than 30 years. But, since most of our apiarists have only single-walled hives, it is useless to spend much time in the consideration of anything else.

A bee-house, if properly made, built as a shed, with a roof and three sides closed for winter, would be an ideal wintering-place, especially if the front could also be closed during stormy days, and the hives more or less packed in straw, leaves, etc. But a bee-house for a large apiary is almost out of the question, and it is only in small apiaries, or in cities, that they are used.

A tight board fence is a good shelter, as far as it goes, especially if on the north side of the apiary. A movable outer covering, made so as to fit over the hive, and arranged so it may be taken to pieces and piled away for summer is very good. It may be made of rough boards, or of thin lumber, to be more easily handled when removed. But it must be so arranged as to permit of the bees' flight during warm days, as said before.

It would be a big error to place the bees in any repository, or to cover them with any shelter which prevents their flight, unless the temperature of such repository is kept evenly at the point which would enable them to remain inactive with the smallest possible consumption of stores. That is why the placing of bees in garrets, or enclosed sheds, where they are certainly warmer than out-of-doors, but where the temperature nevertheless falls much below the freezing point, or rises, in warm days, so as to make them restless, has always been an entire failure.

Our method, which is perhaps not the best of all, but which has always given us very good results, is to place around each hive, on all sides but the front, a packing of forest leaves, held in place with a sort of lattice work made of plasterers' laths and strong twine. The laths are cut in two, so as to make about the height of the hive. The leaves used are found right in the apiary, and simply raked together; and when they are thus closely folded around the hive they give it a very cosy and comfortable appearance, especially when the cold winds blow. The front being left uncovered, the bees can take advantage of any sunshine to take flight, and no particular attention need be given them, except to see that the consecutive thawing and freezing of the snow does not close the entrance and prevent the circulation of air.

A shelter of loose snow, as I said before, is a very good shelter until it begins to thaw, when it is objectionable, especially if the thawing snow fastens to the hive, and refrigerates it, so to speak, by the natural absorption of heat to change to water.

In the hive, over the frames, we always use a straw-mat made of coarse straw, or slough-grass. This, with a cap full of leaves, allows the moisture arising from the bees to readily escape without any deperdition of heat; and places them in the very best possible condition at least possible cost.

The use of leaves as shelter was suggested to us by the oft-repeated remark that leaves are very good to keep the ground from freezing. Any one who has had to dig the ground in the timber in cold weather has noticed how little the ground freezes under a plentiful coat of leaves.

In another article I will examine the question of cellar-wintering.

Hancock Co., Ill.

CONVENTION PROCEEDINGS

UNITED STATES BEE-KEEPERS' UNION.

Report of the 29th Annual Convention Held at Omaha, Nebr., Sept. 13-15, 1898.

DR. A. B. MASON, SEC.

SECOND DAY—AFTERNOON SESSION.

[Continued from page 757.]

SELECTING TIME AND PLACE OF NEXT MEETING.

"Wouldn't it be a good plan to have our next meeting in Philadelphia, at the time of the next G. A. R. meeting?"

Dr. Mason—The constitution puts the time and place of holding these meetings into the hands of the Executive Committee.

Dr. Miller—I move that we request the Executive Committee to appoint the next meeting in Philadelphia, during the G. A. R. meeting.

A letter was read, signed by Arthur Williams, Secretary of the Denver Chamber of Commerce, inviting the Union to hold its next meeting in Denver, Colo. Also, a letter was read from the Citizens' Business League of Milwaukee, Wis., requesting that the next meeting of the Union be held in that city.

Dr. Miller—I renew my motion that the Executive Committee be requested to appoint the place of the next meeting at Philadelphia, during the next G. A. R. meeting. I may say that I am more in favor of meeting at Denver than at any other place in the Union. There are personal reasons for my preference, but I don't believe it is the best thing for the Union. I believe that the one thing to be considered above all others in selecting our place of meeting is the question of railroad rates. I believe that the best thing we can do is to follow the Grand Army. We are then sure of getting low rates, and we cannot be sure of them in any other way.

Dr. Miller's motion was seconded by Dr. Mason.

Mr. Stilson—We have no written invitation from the people of Philadelphia to follow the Grand Army to that place. I don't like the idea of following around as a side-show with those big meetings; therefore, I move to substitute the word Denver instead of Philadelphia. I think with the aid of the Denver Chamber of Commerce we will get as good rates as we can East.

Dr. Miller—May I ask if as good rates were secured this year to the West as would have been secured to Cincinnati?

Dr. Mason—Not by a considerable. I do not see why we cannot hold the meeting in the East, and save bringing the members over all the roads they would have to travel in coming to the West.

Mr. Rauchfuss—We have a lot of bee-keepers in the West.

Dr. Mason—If you could see the letters I have received from those who could not be here because the railroad rates prohibited it, you would think seriously of this matter of reduced rates.

E. R. Root—They have a flourishing bee-keepers' association in Philadelphia. I will guarantee that we will receive a most royal welcome from those people.

Mr. Danzenbaker—If this meeting had been held at Cincinnati this year, we would have had a larger attendance than we had last year at Buffalo. I do not prefer Philadelphia over Denver, but if the Grand Army was to meet here next year, or at Denver, I would say go with it for the sake of the reduced fare. If you want a large attendance, that is the way to get it.

Mr. Scott—I second Mr. Stilson's amendment. I will say that I don't think any people in the United States can extend a more hearty invitation than the people of Denver.

Dr. Miller—These Westerners are aggressive, and they fight to the last minute to have things come their way; but if you simply wipe that all aside, they will take it in good part and come around all right. I don't believe in giving way to them on this matter—not an inch. If you follow the Grand Army, you get the rates and get the attendance, and that is the whole story.

Mr. Stilson—Since you went to Lincoln two years ago, I have heard no kicking about your hotel rates and the accommodations you received there; but ever since you went to Buffalo, following the Grand Army, I have heard every last man telling what poor accommodations he had and what he had to pay for them.

Dr. Miller—We were never treated better than we were in Lincoln; but that is not exactly the question now.

Mr. Rauchfuss—So far as rates are concerned for Denver, I could assure you low rates from the Missouri river; but I could not assure you anything beyond the Missouri. During the first part of October we have our Mountain and Plains festival, and from all Missouri river points we have very low rates.

E. R. Root—We have been in the West three times lately—once at St. Joseph, once at Lincoln, and here; and to go next year to Denver it seems to me would hardly be fair to the East. We haven't been in the extreme East since we were in Washington, in 1892. It would be nothing more than fair to show our appreciation of the Eastern bee-keepers. The matter of rates is an important thing. We had a very large convention, and a very good convention at Buffalo.

A vote upon the amendment of Mr. Stilson to the original motion, substituting Denver for Philadelphia, resulted: Yeas, 19; nays 15.

Pres. York—We will now proceed to vote upon the original motion, as amended.

Dr. Miller—The question now is on the original motion. You will understand very clearly that wherever the meetings are held, there will be a majority of the people of that region in attendance. At one time we had a very earnest discussion over the matter of the place of meeting. The matter was in very much the same condition as it is here, and I said at that time, "If you want to kill the association, and have it become merely a local organization, do just what you are doing; but if you want to have it continue as something that belongs to the United States, then you must treat other localities fairly." The majority of those who are here probably found it more convenient to come here than they would have found it to go somewhere else, but because you have the thing in your hands, if you vote to have the meeting held in the West again next year, you might as well kill it. As I said before, personally, I want to go to Denver, and I would give \$5 to have it at Denver to every dollar I would give to have it at Philadelphia, but I don't believe that is the thing for the Bee-Keepers' Union to do.

Dr. Mason—This very thing was had in view when the constitution was gotten up. At that time we were partially pledged to go to Lincoln. At Toronto we had voted to go there, and the matter was left in the hands of the Executive Committee. If you propose to tie their hands in this way, the matter might just as well be taken out of their hands altogether. I move that this whole matter be laid upon the table.

The motion of Dr. Mason was seconded and carried.

FULL-GROWN LARVÆ IN COMBS ON TREES.

"Is it a common occurrence to find nearly full-grown larvæ in combs formed on limbs of trees?"

A Member—No.

Dr. Mason—I think it would depend on the limb—on its location and size, etc. I have had a comb built on the bottom of a hive, and it was filled with larvæ.

Prof. Bruner—This was a case where small combs were built on the limb of a tree out in the woods, and eggs had been laid and the eggs were hatched, and the larvæ were nearly full grown.

GRANULATION OF HONEY IN THE BROOD CHAMBER.

Mr. Whitcomb—Why does honey granulate in the brood-chamber, and how can it be prevented?

Dr. Mason—Last fall I was prevented from attending to my bees promptly, so that some of the surplus was left until October, too late to extract. I set the frames away and tried to extract some in the winter, but the honey had become so much granulated by that time that the extracting wasn't a success. Last spring the bees used a larger amount of honey than usual, and I thought I would try the experiment of feeding them this granulated honey. Out of about 300 pounds of honey that was mostly granulated in brood-frames, they didn't waste 5 pounds. Some way they used up all the granulated honey. I can't tell you how. The granulation was rather soft. Sometimes there would be a little that was exceedingly hard in places, but aside from that they used it up.

Prof. Lawrence Bruner, of the Nebraska State University, Lincoln, Nebr., then delivered the following address, on

The Bees in America.

I have been assigned a subject upon which, if I should follow it exactly as it reads, it would have been impossible for me to have said anything, for the simple reason that we are not equipt with sufficient literature in the library of the University of Nebraska to enable one to hunt out matter and write an historical paper on "Bees in America," if we confined ourselves to the honey-bee. While I have not prepared a paper on the lines that you probably expected, I would say that I have had considerable experience in squirming and still remaining where I was. I have been able to get some notes together on bees in America, and still not include all of America. Since meeting with you two years ago, in Lincoln, I have spent one year in South America. Now, I do not intend to speak about the bees of South America, still, South America is a part of America. Neither do I wish to include Central America or Mexico, but I shall confine myself to the bees of America north of the Mexican boundary. In speaking of the bees of America north of this boundary, I shall ignore the honey-bee entirely. I know that most of you are aware that we have other bees besides the honey-bee. As an entomologist—a student of bugs and other insects—I treat all alike. I try to know something about each kind and its mission in life.

Among the different kinds of insects that we find in America north of the Mexican boundary there are about 1,000 different kinds of bees, other than honey-bees, and on that line of bees I expect to say a few words this afternoon. These other bees visit blossoms just as the honey-bee does, and possibly for the same purpose. It is a part of their mission in life to visit flowers and select pollen from them. These 1,000 or more kinds of bees that are found in America north of the Mexican boundary are clast by entomologists into two distinct families. Those families differ one from the other in some minor characteristics which the ordinary person need not know. Suffice it to say that the members of both families are fond of sweets, and they find the best of those sweets in the blossoms of plants. It is a part of the mission of bees in life to visit the blossoms of plants, carrying pollen from one to the other, and in that manner fertilizing the blossoms.

I have often been askt as a teacher of natural history, what is the use of insects in this world? The ordinary person is apt to imagine that anything that is not directly useful to that particular person, has no use whatever in this world. There is not a thing that is created in vain, we are told, and I think that the naturalist knows this perhaps better than anybody else, for he makes it his business to follow out the life-habits and movements of these creatures in the world about him.

Some of these insects are equipt very much as the honey-bee is for gathering both nectar and pollen from the plant, and others are equipt for gathering the pollen solely, while still others are equipt for gathering the honey simply. Some of them use the pollen as food for themselves to a certain extent, but for food for their young almost entirely; some use honey and pollen combined as food for their young; none of them use honey exclusively as food for their young. These wild bees are some of them social, but most of them are solitary, or live in pairs. Some of these bees, like the bumble-bee, gather honey and store it. This honey is not used by the mature bee as food to any great extent. If we open a bumble-bee's nest, we find an aggregation of large leathery cells of which some are filled with honey and others with pollen, or a sort of yellowish, brownish paste. They use this food for their young, as the honey-bee does. They will take some pollen and mix it with honey, and have the proper food for their young. The bumble-bee is found with males and females; in some instances they have workers also, or those that do the office of workers. They are simply smaller females, perfect, and not like the workers of the honey-bee.

There is a great variation in the structure of the legs of these different bees. If you will notice these pictures [pointing to certain figures upon charts displayed before the convention] you will observe this variation. These pictures represent only a very small percentage of the variation that is found to exist in the hind legs of the bees. These variations are to serve the purpose of gathering and carrying pollen under different circumstances. Some, instead of having the legs fitted for carrying pollen, have the lower side of the abdomen furnished with a brush for carrying the pollen-grains. Some bees are without pollen-baskets. That would indicate to the entomologist that the bee is a parasite. We have parasites among bees, and they are useful in some ways. They are not useful to the bees upon which they are parasitic; neither are the parasites of the human being useful to men; still, the parasites among the bees are useful in other ways. Every one of those collects a certain amount of honey for itself in passing from one blossom to another, and carries a certain

amount of pollen with it, and therefore is engaged in the cross-fertilization of the plants.

Bees are the fertilizers of plants. As flowers are so varying in their structure, and so different in size, it becomes necessary to have insects adapted to carrying the pollen from one to another. The insects must have different forms and be of different sizes; for that reason we can see very easily why we have so many different species of bees. The genus *Andrina*—we have a representative of it here—that one genus in North America is represented by over 300 distinct species. We have one species of honey-bee in this country, and two in Asia. The species of the genus *Andrina* are usually found early in the year, when the honey-bee is not out, or in such blossoms as the honey-bee does not work. One will visit one blossom, another will visit another blossom; some visit the violet, some visit the blossoms of one tree and some another tree, and they have obtained their specific names from the plants they visit. Suppose one species works on the plum-tree; we call that *Andrina prunus*; the next would be named after the violet, on which it works, and so on. We know pretty nearly what bee fertilizes each of the wild trees. Some of these have exceedingly long tongues, and can work on clover and very deep blossoms; but few of that kind can ever work on alfalfa and red clover.

In this country we are not troubled as they were in Australia about getting the fertile seed of the clover, because we have a leaf-cutting bee. Some of the apiaries they make for themselves are made in the earth, others in wood, others in the stems of plants. Some make earthen cells and plaster them on the under sides of stones, and have them lined with leaves. If you unwrap those little bundles that are there, you will find the egg and the food, and a little later you will find the young grub or worm. These leaf-cutting bees cut out of the leaves of various kinds of plants little semi-circular pieces; hence they are called leaf-cutters. They do not gather honey, as I said before. There are probably 150 to 200 kinds of leaf-cutting bees found in America north of the Mexican boundary. Some are nearly as large as the worker bumble-bee, while others are so small that the house-fly would be large in comparison to them. All have the same general habit, but they visit different flowers. As a rule they have long tongues and visit deep blossoms. The thistle is one of the plants they visit. One genus of these leaf-cutting bees is posset of very bright colors. They have a bright, metallic, blue body, or green, or green and red, all bright metallic colors. A collection of those bees is very beautiful to look at; but to know something about their habits is much more delightful.

I cannot dwell upon each one of those genera, or each one of those groups, because we have over 50 different groups in which these wild bees are placed; some of the groups, like *Andrina*, contain 100 to 300 species each; others, like *Bombus*, contain 40 or 50 different species. Since the last talk I gave on this subject, there have been several species of bumble-bees found that are entirely new. It is a good thing that we as bee-keepers study the habits and know something about the wild bees, and know that if the honey-bee was not present in the region in which we are, nature would still be cared for and the work of nature would be carried on to a certain extent by the native bees of that region. And I want to say right here that none of our wild bees have learned to properly fertilize our fruit-trees. Our principal fruit-trees are an importation from the old world; the honey-bee is an importation from the old world, and the honey-bee has learned its work of fertilizing those fruit-trees in the old world, and knows how to do it in the new world; so we must have the honey-bee with us if we wish to have fruit.

Some of our bees are extraordinary in their make-up. The honey-bee is just an ordinary kind of a bee in its make-up, and in its general appearance. Studying these wild bees we find some in which the hind legs are excessively enlarged and much contorted. Some of those contortions might have been shown in these illustrations, but I don't happen to have them. In some the first joint of the foot is much larger than all of the leg put together, and is covered with hook spines, or long hooks or knobs of various kinds. They serve some special purpose, doubtless, which does not exist in the case of the others whose legs are not so specialized.

There is one thing concerning the wild bees that I may be wrong about: Some one visited me and said there was a wild bee that came to his apiary every year and robbed his own bees. I said it was probably the ordinary black bee, but he said it was not, because he had both the black and Italian bees in his apiary, and knew them well; he said that the robber was a much smaller bee. I told him I didn't think any of our wild bees would be guilty of doing any such thing, that it must have been some bee that had been associated with man

for a long time to learn the habit! Now I want to ask some of you who are here, and who have had more experience, whether any of you have seen wild bees of that kind—bees of that description that came to your apiaries and carried off honey.

Mr. DeLong—Out in my country I have observed groups of small, dark-striped bees that weren't any larger than a house-fly. They were along the hedge-fences, and were in numberless swarms—sometimes thousands in a swarm. I wondered where they came from, and when I got to work extracting my honey I found a considerable number of them dead in the hives; but I didn't find them carrying away honey. When I was extracting they came and lit on the combs as I was handling them. They were little, black, slim, long fellows, with stripes around the body.

A Member—Is the yellow-jacket a bee?

Prof. Bruner—It comes pretty close to being a bee; it is one of the wasps. I was going to speak of the cuckoo-bee. What is meant by the cuckoo-bee is a parasitic bee. We have certain species among our wild bees that live upon the labors of other bees. The other bees make nests and carry a supply of pollen and honey and fill the brood-cells ready for laying their own eggs, and perhaps when there is just one more trip necessary to be made before the cell is completed and ready for receiving the egg, one of these cuckoo-bees will slip in and deposit an egg in the cell and get away before the rightful owner gets back. The bee that has constructed the nest will come back and deposit the last load of pollen and lay her egg in the same place. The cuckoo-bee's egg hatches first into a small grub, and eats the egg or the young larvae of the bee that constructed the nest, and then goes on eating the food that was provided. We have probably 150 or 200 species of these cuckoo-bees.

The bees of the one genus are parasites upon the leaf-cutting bees; on the other hand there are certain other bees that live in the nests of the *Andrena*, and that are called *Nomada*, because of their habit of wandering around and laying their eggs in other bees' nests. This habit is much like the habit of the cow-bird, which lays its eggs in other birds' nests. Cow-bird eggs have been found in the nests of over 100 other kinds of birds. The other birds sit upon and hatch the strange eggs. In this same manner the cuckoo-bees are brought up by the industrious bees of other sorts that are willing to work. These cuckoo-bees have no pollen-brushes on their legs; they are not capable of carrying pollen themselves; if they wanted to carry pollen for nests of their own, they would not be able to do it, and so they must force other bees to bring up their young.

There are a great many other things in connection with the wild bees that I might bring up, and that would no doubt be interesting to you. If I were to carry the discussion of the subject into the tropical countries, I certainly could bring up something much more interesting than could be found in this country. But time does not permit. What I should like to impress upon you as bee-keepers is this: Try to devote just a little bit of time to the study of our native bees. I think you will find that study very beneficial in carrying on further work with the hive-bee. We find that there are a great many questions in connection with our work with the honey-bee that are not settled. Many of us who might take up this line of work are too busy in other directions. I am sorry sometimes that I have not confined my time to work upon the honey-bee; but I could not be a teacher of entomology if I had done that, because the teacher of entomology must know something about other insects as well as the honey-bee. Any one who has started out to study one particular branch of natural history has usually become so intensely interested in it that he has branched out and taken up other lines as well. The naturalist, whatever part of the country he falls into, always finds something to interest him.

As I stated in the beginning of my talk, I have visited South America since I met with you last, and during that time I can assure you that not every one of my experiences was pleasant. Out of every 200 people in the Argentine Republic whom I met, I found but one who was able to talk my language, and so I had to try to speak the language of the other 199. Those people I found were not friendly to the United States, because they said we had a "Bill Dingley" up here, and they made it very disagreeable for me in every way possible. Some of them carried long knives, and if I had not been on the watch constantly they might have taken advantage of me. Those things were of course a little bit out of the line of pleasure. Still, I got out with Nature and enjoyed myself as I have never enjoyed myself before, and as I never expect to again.

In South America, while I collected insects only a couple of weeks, I think I collected something like 350 or 400 dif-

ferent kinds of wild bees, and none of those are identical with those we find in North America. I found one that builds its nest on trees down there and gathers honey. I do not know what it is. The cells in which the honey is placed are of the size of a small straw, and the honey is sour. The bee is of about the size of the house-fly, or a little smaller, and they sometimes make nests as large as a bushel basket, and the material they make the comb of is something between wax and paper. I expect to try to work out this insect and find out what it is. It has a sting. I don't think that any bee that gathers honey is stingless.

A. I. Root—A couple of our soldiers who have returned from Cuba informed me that they saw the natives getting honey from a stingless bee. They had pailfuls. They said the honey was dark-colored, almost as dark as tar. The natives were in the habit of going out into the woods and bringing in considerable quantities. They said they saw the bees at work. The cells were very much like the cells of bumblebees. The bees alighted all over them, and they brushed them off. They didn't sting at all, but of course they fought for their honey; they would bite.

Prof. Bruner—It is a peculiar fact that naturalists never run across anything of that kind themselves, when they are out looking for just such things.

A. I. Root—The men rather admitted that they did not know that the pailfuls of honey came from the nests of the stingless bees. They saw the bees and the cells.

Prof. Bruner—There is an ant down in that country that we call the honey-ant that sometimes stores a very dark honey. It is the honey from plant-lice, and it is stored. Whether that would be the stingless bee or not, I don't know.

A. I. Root—We had some specimens of stingless bees in our apiary at one time. They did not gather honey. They came from Central America.

Prof. Bruner—While we have heard a great deal about things of that kind, it is peculiar that none of the naturalists who have collected in that region have ever run across the insects themselves.

PLANT LICE, HONEY-DEW, ANTS, ETC.

E. R. Root—I would like to ask a question in regard to plant-lice. Some six or seven years ago plant-lice seemed to be quite prevalent, and during the lapse of time since we have seen little of them. During this season the plant-lice have made their appearance again, and honey-dew is scattered through a good deal of the honey. Is there any reason why they should do that?

Prof. Bruner—There are reasons, but we haven't found out what the reasons are. Usually in a wet spring and during the summer following we have those very conditions. We have comparatively little honey-flow during a wet season. During that time, and during the dry season following, the plant-lice increase much more rapidly than ordinarily, and the bees gather whatever they find, owing to the scarcity of honey.

Mr. Westcott—In our locality we have always had the honey-dew every year, but the bees don't work on it except when there is no other honey.

Mr. Hatch—Is there such a thing as honey-dew without the aphids?

Prof. Bruner—I do not think there is. The relation between ants and honey-dew is one of the most interesting things we find in the study of natural history.

Mr. Masters—During the last summer I found ants following the aphids from one tree to another.

Prof. Bruner—They were probably trying to get new feeding-grounds, for their eggs. I have known ants to carry the eggs of the aphids and store them in their own nests, and to bring them up and put them in the galleries that are built a half inch or so below the surface of the ground, where the sun could hatch the aphids' eggs. If a cold day came, the ants would carry the eggs down into the recesses of their nests. After the eggs were hatched, the aphids would be carried up and placed along the roots of various kinds of plants, and take care of them in that way, all the time getting their reward in the honey-dew which the aphids yields. They are the ants' cows. The ants milk them. Some ants have certain kinds of plant-lice that always live underneath the ground, in the ants' nests; and the ants' nests are built along the roots of certain plants—some particular kind of aster, that the aphids prefers the sap of.

Dr. Miller—There is a certain ant that sometimes will burrow into the wood of hives and utterly honey-comb it. It is dangerous, because sometimes you don't know there is anything wrong, when the whole thing is utterly ruined and gone. Can you tell us any prevention or remedy?

Prof. Bruner—The best remedy would be to make your

hive-bottom of iron. That is the termite that is so much spoken of in our books.

Dr. Miller—It is a large black ant.

Prof. Bruner—Salt will keep the black fellows away partly, but not entirely. They don't work except in rotten wood, as far as I know.

Dr. Miller—These will take sound pine wood and make burrows all through it.

Prof. Bruner—That is some ant that I don't know.

Mr. Westcott—I think kerosene will drive them entirely away. I have used it around in the apiary, and the ants would leave.

By a unanimous rising vote, the thanks of the Union were extended to Prof. Bruner for his interesting address.

The Secretary then read a paper by Mr. C. P. Dadant, of Illinois, entitled,

The Scientific Side of Apiculture.

Science is often said to be "theory," while "labor" is "practice," and many of our successful, hard-working men look down upon those whose mind is entirely turned to the scientific study of a subject without much regard for the practical side of it. The scientist is said to be "lazy," because he wastes valuable time in apparent loafing, that might be successfully employed in money-producing labor. It is true that he is always experimenting, trying new things, which fail oftener than they succeed. He spends hours, and days, and weeks, watching his bees flying in and out; he tries all sorts of hives, and never has two of the same shape; he wantonly destroys entire colonies in costly experiments; in short, he makes a "botch" of everything that he undertakes. But, after all, it is he who makes the progress, of which we take the benefit.

It was the scientific apiarist who found out that the queen was not a "king," but a mother, and that the drones were not the females, but the male bees. He discovered how the queen was reared, and how she mated, and how we could help Nature and rear queens artificially. He has taught us why a queenless colony did not succeed, and what could be done to save it.

He has discovered that the bee-moth was not the enemy of man's interest to the extent that was believed popularly, and that it was not much more to be feared than the house-fly; and he promptly showed us how to avoid its ravages among the hives.

It was he who discovered that what the bees carry home on their legs is not wax, but pollen, and that this pollen is necessary to the rearing of brood; and he has taught us how to supply this needed pollen artificially in seasons of scarcity.

It was he who discovered that comb was made out of digested honey, and not out of pollen; and that this comb is, therefore, the most expensive part of the habitation of bees. He has sought for means of returning this expensive material to the bee, after it had been melted up in an undervalued article of commerce, and he has finally succeeded in pointing to us successful methods of doing this.

It was he who found out that success in bee-culture could not be achieved until the entire hive was under the control of the apiarist; and he invented the method of having each comb hung to a separate frame, so that we might take our hives to pieces—"like a puppet-show." In this one particular alone there has probably been as much study and as many inventions, and brain-worrying trials, as on all the rest of the scientific study of bees put together.

It was the scientist, also, who ascertained and taught us that the drone is fit only for the reproductive function, and that we should avoid rearing it in large quantities; that the surplus consumed by the drones, in a state of nature, should be the share of the hard-working apiarist.

Is the work of the bee-scientist over? No, not any more in bee-culture than in electricity, or in farming. We might as well say that we have reached perfection, and that nothing more remains to be learned. To increase production by new methods, to improve our bees by selection, to breed races with longer proboscis and greater prolificness, to produce red clover with a shorter corolla, so that our bees may derive profit from its plentifulness throughout the land, are a very few of the questions of the day.

But there are probably many improvements to be made, of which we do not dream any more than we dreamed of talking to our friends at the end of a wire, 40 years ago. Progress is so sudden and so unexpected in all things that it is quite probable that the next century will reveal as much novelty and as much advancement in our line as the past century has brought forth, and we may achieve in bee-culture as wonderful things, compared to the past, as have been achieved in other channels, through the discoveries of science.

C. P. DADANT.

[Continued next week.]

QUESTIONS AND ANSWERS

CONDUCTED BY

DR. C. C. MILLER, MARENGO, ILL.

[Questions may be mailed to the Bee Journal, or to Dr. Miller direct.]

Windbreak or Shelter for Bees.

I keep my bees in a yard near the kitchen where they are always in sight. But here is the trouble: Our house is on a small elevation, and the wind is blowing most of the time in the spring and summer, and I notice it interferes with their work a great deal. If I should move them to the foot of the hill they would be out of our sight most of the time, and within a few feet of the public road. I can move them 200 yards in shelter of some trees, or build a windbreak. Which is better? I have about 50 colonies. WASHINGTON.

ANSWER.—Without being on the ground so as fully to get the lay of the land, I should vote for the shelter of the trees. It's cheaper, more likely to stay in order, and will be a shelter not only for the bees, but the trees will be a fine shelter for the bee-keeper on hot days. Any windbreak that you make to be good for cold, windy times, will be likely to be uncomfortably hot for man and bees on still, hot days in summer.

Foundation in Extracting-Frames.

1. How shall I fasten the comb foundation in the shallow extracting-frames with a groove running in the center of the underside of the top-bar?

2. Which is preferable for such frames, starters or full sheets? SUBSCRIBER.

ANSWERS.—1. Slide the edge of the foundation into the groove. If it does not go in easily, flatten the edge a little with the flat side of a case-knife, or by running a little wheel over it. A few drops of melted beeswax dropped here and there along the joint will hold it in place. A drop every two inches will be enough, providing that drop is attached to both the wood and the foundation. A spoon with the end bent together will do to drop the melted wax, but the tin spoon described not long ago in the Bee Journal is better. You can use rosin and wax instead of pure wax for fastening the foundation, and it is perhaps a little better for that purpose, but it is not advisable to use it, for when the combs come to be melted up in future years it will be better to have no rosin present.

Sometimes no wax is used, the foundation being wedged in. Two grooves are made close together. Put the foundation in one, then put the little stick that acts as a wedge in the other, crowding it in pretty tight, and the foundation will be held firmly in place.

2. Most prefer full sheets. That secures worker-comb, and makes less temptation for the queen to go up and lay. Even if an excluder is over the brood-chamber, if drone-comb is above, the workers will often hold it empty for the queen to lay.

Reliquefying Granulated Honey—Queen-Rearing

I saw an article in the Bee Journal about reliquefying honey after it is granulated. How is it done? We have been handling bees only about 18 months, and we are anxious to get all the light on the subject that we can. My husband is a railroad conductor, and the bee-business is mine to attend to. I take a great interest in the bees. I have swarms and handle them all the time. We have 18 colonies, and take quite a lot of bee-literature, and try to inform ourselves, but I think experience is a good thing to mix along with book-learning. Then, I like good advice, too. Let me hear from you about the granulated honey, and about queen-rearing, and any good points that beginners ought to know. TEXAS.

ANSWER.—If you want to liquefy your granulated honey, all you need to do is to heat it till it melts. But like most things, there's a wrong and a right way to melt it. Heat it till it boils and it's ruined. Better not let it get above 150°. But you may not be able to tell easily just how hot it is, so you may take some plan by which you are pretty sure it will not get too hot without using a thermometer. Set it on the reservoir on the back of the cook-stove, and let it stay there till it melts clear. All the better if it takes several days. Another

way is to set on the back of the stove a kettle or pan in which you can set the vessel that contains the honey. Set the outside vessel on the back of the stove and put on the bottom of it a bit of shingle or thin board and set on this the vessel of honey. Now fill up the outside vessel with hot water. The bit of board prevents the bottom of the honey from burning, and it will melt slowly.

The latter part of your question is one that it would take a great many pages to answer. Indeed, after an entire book has been written to try to give the points that a beginner ought to know, there are always enough questions to keep this department well filled. Even in the matter of queen-rearing alone a whole book has been written, and a most excellent one it is. If you are interested in queen-rearing by all means get the book on queen-rearing by that prince of queen-breeders, G. M. Doolittle.

Laying Workers.

I have two colonies of bees that I think have laying workers. The sealed brood looks like loaded pistol cartridges. What can I do with them? I want to save them. S. C.

ANSWER.—That's a hard question to answer, because you will probably not be willing to accept the best answer that can be given. The best thing is to destroy them. There isn't a chance that they'll be worth anything next spring, and very little chance that any of the bees will be alive then. The probability is that no worker-brood has been present for a good while, and all the workers are aged. It may suit you better to unite them with another colony, for then you will seem to be saving their lives. But in either case, if you allow them to live, they will only consume a lot of honey and die after all.

Wants Increase Next Spring.

1. I have about 50 colonies and I want to increase my apiary in the spring about 30 colonies. Would it be better to buy Italians in nuclei and have them shipped to me, or buy black bees at home for \$2.50 to \$3.00 per colony, and transfer and Italianize at my own expense? The honey-flow commences here from sweet clover about July 10, but there is always plenty of honey coming in to keep them building up, before that time.

2. Would a 2-frame nucleus and queen be strong enough?

3. When would the best time be to purchase them so they would be ready for the harvest? WASHINGTON.

ANSWERS.—1. Probably you'll do better to buy the blacks and Italianize. You'll get ahead in increase faster in that way, and if you intend to keep Italian blood it will give you just so much more experience in introducing queens, for you'll find you will have considerable to do in that line if you try to keep anywhere near pure blood. You might combine the two plans, getting one or two nuclei, and the rest black bees.

2. A 2-frame nucleus, having a fair start in the season, will build up into a strong colony in a fair season, but you can hardly count on any surplus from it unless the season is extraordinary.

3. The year before.

Wintering—Queen's Laying—Uniting.

1. Will bees get along better through the winter in a hive that is perfectly air-tight all around (except the entrance) than in a hive that is slightly open, either around the cover or bottom-board?

2. How many months in a year should a good Italian queen be laying? and is it advantageous that she be laying late in the fall?

3. What is the advantage in uniting two fair colonies in the fall? WASHINGTON.

ANSWERS.—1. In ordinary cases, with ordinary entrance, they might be better off not to have all but the entrance perfectly air-tight. With a very large entrance, probably the closer the rest of the hive the better.

2. She may lay somewhere from 7 to 9 months. Under ordinary circumstances, the question as to whether it is advantageous to have a queen laying late in the fall should be answered in the affirmative. It is generally considered a desirable thing to have a goodly number of bees not too old to enter winter quarters, and late laying works toward this end. But if there is no yield of honey in the fall, it may be as well that she stop laying, as she generally does, earlier than if honey was yielding. For the period at which bees finish their

course does not depend so much upon the number of days they have lived as upon the number of days they have worked. So it may happen that a bee that emerged in August may be younger than one in a second locality emerging in September, providing the yield in the second locality continued 2 months' later than that in the first.

3. Probably none, generally speaking. If you have more bees than you want, and must unite to keep down increase, it may be better to unite in the fall than in the following spring, for the united colony will consume less honey than the two would if left separate.

Will It Winter?—Stimulative Feeding.

1. Will a colony winter that covers both sides of three frames half way down, packed in leaves with plenty of honey? They are on frames of standard size, and had little brood Oct. 4.

2. If feeding stimulates brood-rearing in spring, how early, and how much, would you feed? Fruit blooms here about May 20; clover blooms about June 10. MASS.

ANSWERS.—1. Can't say for certain. Doubtful. It would be safer in a good cellar.

2. Try it only on part, and find out whether stimulative feeding is a good thing for you. Feed only when warm enough for bees to fly. Don't feed when it is so cold that the bees will be chilled to death when the feeding starts them to flying out. A half pound a day will be enough, unless they are somewhat short of stores.

Stimulative Feeding in the Spring.

I have four colonies and wish to increase largely in the spring, by stimulative feeding. When will it be best to commence feeding? Also, how much honey and water would you feed one colony per day? Do you dilute the honey with water? How do you feed it? SUBSCRIBER.

ANSWER.—Stimulative feeding in spring is a little like handling edged tools. Some judgment and experience is needed, or you'll do a good deal more harm than good. Indeed, there are many good bee-keepers who do not consider it advisable to practice stimulative feeding. Don't feed until bees are flying freely, for when it is too cold for safe flight, feeding may cause the bees to fly out never to return. Possibly it might be a good plan for you to try stimulative feeding on part of your colonies and compare results. An equal quantity of water may be added to the honey, and half a pint to a pint of the mixture given daily to a colony. Use any kind of a feeder you have on hand. Look out, however, that you don't start robbing. As soon as you find there are flowers for the bees to work on, you may as well stop till there is again a scarcity. Such scarcity occurs in many places between fruit-bloom and white clover.

Bee-Keeping for Beginners is the title of a 110-page book just out, from the pen of that expert bee-keeper of the South, Dr. J. P. H. Brown, of Georgia. It claims to be "a practical and condensed treatise on the honey-bee, giving the best modes of management in order to secure the most profit." Price of the book, postpaid, 50 cents. Or, we will club it with the Bee Journal for one year—both together for \$1.40; or, we will mail it as a premium to any of our present subscribers for sending us one new subscriber to the Bee Journal for a year (at \$1.00), and 10 cents extra.

Langstroth on the Honey-Bee, revised by The Dadants, is a standard, reliable and thoroughly complete work on bee-culture. It contains 520 pages, and is bound elegantly. Every reader of the American Bee Journal should have a copy of this book, as it answers hundreds of questions that arise about bees. We mail it for \$1.25, or club it with the Bee Journal for a year—both together for only \$2.00.

The Names and Addresses of all your bee friends, who are not now taking the Bee Journal, are wanted at this office. Send them in, please, when sample copies will be mailed to them. Then you can secure their subscriptions, and earn some of the premiums we are offering. The next few months will be just the time to easily get new subscribers. Try it earnestly, at least.



GEORGE W. YORK, EDITOR.

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NOTE.—The American Bee Journal adopts the Orthography of the following Rule, recommended by the joint action of the American Philological Association and the Philological Society of England:—Change "d" or "ed" final to "t" when so pronounced, except when the "e" affects a preceding sound.

The Chicago Bee-Keepers' Association

met Dec. 1, as was announced. There were present about 40 people interested in bee-keeping. Some 35 of them became members of the organization, which now quite rivals that of Philadelphia in numbers, tho the latter is perhaps 15 or 20 years older. It is thought by some that there are over 200 bee-keepers in this (Cook) county. We hope that all of them will send in their 50 cents, and become members. Their membership fee can be mailed or handed to us, and we will see that it gets to the Treasurer.

The officers elected for the ensuing year are: President, C. Beers; Vice-President, Mrs. N. L. Stow; and Secretary and Treasurer, Herman F. Moore.

As a shorthand report of the proceedings was taken for the American Bee Journal, our readers may look for it after the completion of the Omaha convention report, now appearing, which will be about the middle of next month.

Bee-Literature Without Bee-Knowledge.

—That scribblers who know nothing about bees should constantly appear in print with statements that bring a smile to the face of a practical bee-keeper is nothing strange, but it does seem strange that reputable publications that really care for the truth should allow in their columns matter about bees so crude that it would hardly be suffered in relation to any other topic. That very able and reliable paper, The Youth's Companion, has a serial in its September numbers called "The Story of a Bee-Farm," that is notable for the very little information about bees, and the remarkable character of much that is given. A few samples may be given:

Bees don't sting after you learn to handle them, but for

the first few seasons you must wear veil and thick gloves. Nuclei are called "nucleus swarms," and colonies are called "colony swarms." Italians gather honey from many flowers which native bees neglect. A good place to winter bees is a room above ground with an oil-stove to raise the temperature to 40° during cold snaps. "Never throw hot water at the robbers—that is barbarous and unscientific." (Probably that is the first time hot water for robbers was ever thought of.) A cloudy and damp afternoon, when most of the bees are in the hives, is especially favorable to begin Italianizing. Queens, not colonies, are "transferred." The expert operator of the story worked every day of the season with her own bees with bare hands and arms, and was never stung once, but put on veil and gloves when essaying to handle bees away from home, because *the bees were strangers to her!* The story winds up by saying:

"At the present date of writing, January, we have 40 hives of bees in our dormitory. They are all wintering well, so far as can now be determined, and the outlook is that we can gain a comfortable livelihood keeping bees, even at the present low price for honey."

There ought to be a lively demand for a brand of bees, 40 "hives" of which would support a family!

What Credit Costs.—In the National Stockman and Farmer of recent date we found this paragraph:

"Did you ever think of how very expensive a luxury credit is? It doubles the expense of book-keeping, doubles correspondence, multiplies worry many times over, often destroys confidence, wrecks business galore, and makes mischief of all kinds without limit. More than all, many of these things enter into the cost of nearly everything which is bought and sold, and even the cash buyer, with all his discounts off, pays enhanced prices because of the cost of other people's credit. Imagine the world running a month without the credit system! Next to the millennium it would do more to create and maintain general happiness than any other condition that could be introduced."

Every word of it is true. And so is the advice of the man who said, "Pay as you go, or else don't go." How much more pleasant it would be to do business if every one would get cash and pay cash. If we could get all the money past due on subscriptions alone, we could not only pay cash promptly right along, but could get up a much better bee-paper than the American Bee Journal is now.

Why wouldn't it be a good plan for our subscribers to begin at once to keep their subscriptions paid in advance? It is a splendid feeling to have—the feeling that your financial obligations are all met. We'd like to enjoy that feeling once more, and might soon do so if all who owe us could see their way clear to send it in.

Killed by Eating Wax is the rather bold heading of this item, which appeared in a recent issue of the Minneapolis Tribune:

"Carl Maynard, son of M. M. Maynard, a fruit-grower, died Thursday morning of a very peculiar malady. The young man had been eating very heartily of honey in the comb, and the large amount of beeswax he ate clogged up his stomach and intestines to such an extent that sickness and death resulted in spite of all efforts of the doctors to save him. Mr. Maynard was about 26 years of age, and worked on his father's farm."

Mr. John M. Seller, one of our regular subscribers, sent us the foregoing, and added these words:

"I know the father, but did not know the son. Three of them ate a one-pound section of honey."

It is just possible that eating the honey had a little to do with the case, but the probability is that it had nothing whatever to do with it. For three men to swallow the wax contained in a pound section of honey is a matter not at all remarkable. One man might swallow that much wax any day,

or for that matter every day, and suffer no inconvenience from it. The wax would be in small pieces, and produce no bad effects. Suppose the worst possible case, that in eating the pound section one of the three men got more than his share and got all the wax, and suppose that by some means it got worked into a solid ball, it would be about an inch in diameter, and could pass through in that form without clogging either stomach or intestines.

We think no one need stop eating comb honey on account of the above instance, for in all probability there were other complications besides the little wax that conspired to cause the death of the young man.

We believe we never before heard of three persons eating a pound section of honey at one sitting. Of course it may be easily done, but why should any one want to fill up with so much sweetness all at once? People ought to use common-sense in eating as well as in anything else.

Large Hives Abroad.—In *Gleanings*, C. P. Dadant gives an interesting sketch of the introduction of large hives into France, Switzerland, Italy, Belgium, etc. This was accomplished chiefly by the elder Dadant, altho he was living in America. Of course it was through writings in the bee-papers. L'Apiculteur, at that time the leading journal in the French language, was bitter in its opposition of large hives, and also of movable-frame hives. Mr. Dadant sent a translation of a report given by A. I. Root in the *American Bee Journal* for 1868, page 64. By giving extra stories and extracting frequently, Mr. Root had taken 203 pounds of honey up to July 21. The easy reply of the French editor was that the whole thing was a hoax. This will not be so hard to understand when it is remembered that the Europeans at that time used hives smaller than the 8-frame Langstroth, and Bastian wrote that there was no necessity for a super containing more than 6 to 12 pounds of honey. Later, M. Bertrand started *Revue Internationale*, and slowly but surely new methods took the place of the old ones, and to-day large hives are the rule. The editor of *Gleanings* is strong in the belief that large hives and large colonies, the two together, are the things for producing honey.



MISS MATHILDA CANDLER, of Grant Co., Wis., called on us last week. She has had a fair honey crop this year, and has 60 colonies now, in good condition for winter.

MR. FRANK McNAY and wife left last week for Southern California, where they expect to spend the winter. Mr. M. called to see us when passing through Chicago. We trust they will have a pleasant winter, and we commend them to the California bee-keepers.

MR. JOHN A. BLOCHER, of McLean Co., Ill., wrote us Nov. 25:

"The Bee Journal is all right, and I like to read it. It helps me out in a good many things. My bees did well this season, considering."

MR. GEO. W. HUFSTEDLER, perhaps the most prominent queen-breeder in Bee Co., Tex., writing us Nov. 25, said:

"We are having some real winter weather here. My bees are in fine shape for next season—about 225 colonies after doubling up for winter."

DR. C. C. MILLER, of McHenry Co., Ill., attended the regular quarterly meeting of the Chicago Bee-Keepers' Association, Dec. 1. He was feeling fairly well, or as well as could

be expected at his age—67 years. But his heart is just as young as when it first began to "beat its way" in this world. Dr. M. is very hopeful that next year may be a good honey season. This year he harvested about 1,000 pounds of honey—good, bad and indifferent. He had nearly 300 colonies, run for comb honey.

MR. W. A. CRANDALL, of St. Lawrence Co., N. Y., writing Nov. 26, said:

"I can hardly wait until the *American Bee Journal* gets here each week. I feel like thanking all the correspondents for the many good things."

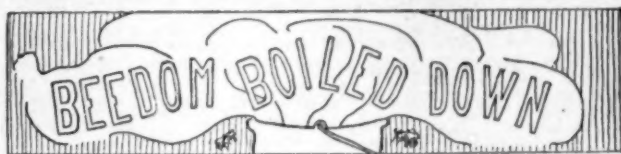
MR. M. H. MENDLESON, of Ventura Co., Calif., writing us Nov. 22, had this to say:

"It is still dry here, and some are crying 'dry year again.' I do not expect early rains, but I hope for a rainy winter. I wish you continued success."

MR. M. M. BALDRIDGE, of St. Charles Co., Ill., made us a pleasant call Tuesday, Nov. 29. Altho living only about 40 miles from Chicago, he has not been here for a year. Mr. B. still gets from consumers his old price of \$1.20 for a 5-pound pail of honey, as shown by his pocket order-book. His crop was about nothing the past year, in common with many other bee-keepers.

MR. A. P. RAYMOND, of Clark Co., Wis., called to see us last week. Years ago he was an extensive bee-keeper in New York State, but for some years he has been a traveling man. He expects very soon to engage in bee-keeping again. He will succeed. He is a fluent writer, and we trust we will have the pleasure of hearing from him frequently when he once more enters the field of bee-keeping.

MR. J. F. MOORE, of Seneca Co., Ohio (a brother of Mr. H. F. Moore, Secretary of the Chicago Bee-Keepers' Association), called last Friday. He has about 250 colonies of bees, but secured only a small crop the past season, like the great majority of bee-keepers this year. Mr. Moore is a very pleasant gentleman to meet. It would have been a fine thing if he could have attended the Chicago meeting of bee-keepers had he been here a day sooner.



Cotton as a Honey-Plant.—H. H. Hyde says, in the *Southland Queen*, that cotton is his main honey-plant in July and August, giving a long and continuous, slow flow, usually producing a good crop, of fine flavor.

Swarms Leaving with Strange Virgin Queens that unite with the swarms after issuing are spoken of sometimes as making trouble when queens are clipped. J. B. Hall says, in the *Canadian Bee Journal*, it is a mistake to suppose such a thing. A swarm that issues leaving its clipped queen may go off with a strange laying queen, but not with a strange virgin. In such supposed cases a virgin queen issues from the hive together with the laying queen.

Bee-Hives are discussed by W. Z. Hutchinson in the *Country Gentleman*. He advocates small hives, less rather than more than an ordinary queen will fill in the height of the breeding season, eight Langstroth frames being sufficient; prefers an outer case with temporary packing to chaff hives; thinks the Heddon the best hive and the dovetailed next; says closed-end frames can be handled more rapidly than open-end ones; and thinks the honey-board will hold its own against wide, deep top-bars.

Getting Bees Off Extracting-Combs.—Bees leave captured combs more readily than uncaptured ones—an extra point in favor of leaving combs to be captured, according to J. R. Jasek, in the *Southland Queen*. He takes off the super without taking out the frames, but he doesn't use bee-escapes. Too many bees remain, even if the escape is put on the evening before, sometimes ants take possession after bees are scarce in the super, and sometimes the combs melt down in the hot sun. He has a

good volume of smoke, doesn't blow any in the entrance, but blows under the cover as soon as raised, and keeps blowing over and between frames all the while he is putting the cover aside and loosening the super. Then he quickly sets the super on a wheelbarrow, covering with a robber-cloth. The whole operation is done in two minutes if the combs are all sealed, longer if the cells are unsealed. The combs are taken on the wheelbarrow to the honey-house, and the bees remaining on them fly to the escape window, a few young ones being brushed on some extracting-combs.

Experience on too Small or Large a Scale.—Editor Hutchinson has advised trying new things only on a small scale. Dadant and Heddon object that you can't tell much by too small experiments. Editor H. says there are two sides to the question, and gives the sensible rule: "It is not advisable to adopt a new plan or invention, about which there is any doubt, upon a larger scale than that upon which you can afford to meet with failure.—Bee-Keepers' Review.

Southern Honey.—The editor of the American Bee-keeper enters a protest against some statements made at the Omaha convention relative to Southern honey. E. R. Root said: "Southern honey has a strong flavor which is liked by some." Mr. Hill thinks the elder Root was nearer the mark when he said, "Most localities yield both good and poor honey." Mr. Whitcomb is asked for proof of his assertion that a warm climate produces honey of inferior quality, and a colder climate honey of much better flavor. C. F. Muth is quoted as including in the three choicest varieties of American honey, two that are Southern.

Much Depends on How a Thing is Said.—The editor of the Bee-Keepers' Review says there are different ways of telling what one knows. "Knowledge, of the accuracy of which one is absolutely positive, if imparted with an air of superiority, often arouses resentment instead of gratitude. To be able to point out the ignorance or fallacious ideas of a friend with such tact that he seems to have discovered them himself; to start in his mind a train of reasoning that will lead him to a correct conclusion; to thus bring out the best that is in him, is an accomplishment worthy of great effort. One can be positive and outspoken, and yet courteous." True words, and well said.

Full Sheets of Foundation in Sections were discussed in the Canadian convention. Messrs. Best and Post thought full sheets secured twice as much honey as small starters. Mr. Sparling and Mr. Holtermann thought not so much as double,

and Mr. McEvoy thought three times as much. Messrs. Hall and Hosball had tried, in the same super, sections filled with foundation and sections with a narrow strip. The former were solidly sealed while the latter were half full of comb with no sealing at all. Messrs. Holtermann and Newton argued a better price for the better appearance of sections as full of foundation as possible without bulging.—Canadian Bee Journal.

Are Separators Indispensable?—H. R. Boardman in his travels through Michigan, as he relates in the Bee-Keepers' Review, was surprised to find that so many progressive, practical men had dispensed with separators. He thinks thoughtful and careful apiarists may dispense with them, but the editor thinks it is more a matter of locality. Separators are needed where the flow is slow, or comes on slowly. In Michigan the flow from clover or linden comes suddenly, the bees commence on all sections, all grow alike and are like so many bricks. But he would use separators in a place where many bulged combs would be built without them.

From the Egg to the Bee.—Fr. Greiner reports some observations in Gleanings. He watched through a glass wall, a colony with four frames in very hot weather, and at no time in their history did the larvae die stretched out straight—always curled up. Part of the worker larvae were sealed in 8 days and 14 hours, all within nine days. The shortest time from the egg to the perfect worker was 20 days and 2 hours. All emerged from the market cells in less than 21 days, except one which he lost track of. In drone-cells the capping occurred in 10 days. The bees gnawed off the waxy surface of the drone-cappings to some extent, somewhat as they do with queen-cells. The shortest time for the drone was 24 days and 16 hours, the longest time just 25 days.

To Requeen Cheaply.—Delos Wood does it thus (Gleanings): One of his best colonies he sets apart for queen-cells. To another he gives a large amount of drone-comb. Stimulates the one to be used for cells and gets a strong swarm from it. This swarm is put in an empty single-story hive, and as soon as the queen has a circle of eggs and brood in several combs, the queen is taken away. The edges of the combs are cut away, thus removing the eggs, and having just-hatching eggs at the edges. Cells are built by wholesale, and of the best quality, the queens emerging at the same time. Many fine cells can also be saved from the old colony that swarmed. He never gets good queens by giving eggs. By the time the larvae hatch out of the eggs the bees have lost their vim for brood-rearing.

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In the multitude of counsellors there is safety.—Prov. 11-14.

Does Any Color Irritate Bees?

Query 86.—1. Is it true that bees are less likely to sting one with white clothing than with black?

2. Or are bees in any way irritated by any particular color?—Ohio.

W. G. Larrabee—1. Yes.

Eugene Secor—1. I think so.

Prof. A. J. Cook—1. I think so.

Dr. A. B. Mason—1. I believe it is.

P. H. Elwood—1. Yes. 2. Yes, dark colors.

Emerson T. Abbott—1. I do not know. 2. I doubt it.

Dr. C. C. Miller—1. Yes. 2. The lighter the better.

G. M. Doolittle—Anything black and woolly and fuzzy seems to call forth the ire of bees beyond anything else. A

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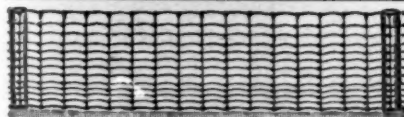
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4. Our Poultry Doctor..... 30c
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6. Hand-Book of Health, by Dr. Foote..... 25c
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8. Rural Life..... 25c
9. Ropp's Commercial Calculator..... 25c
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12. Blenden-Kultur, by Newman..... 40c

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white, smooth surface is the least objectionable of anything, according to my experience.

J. M. Hambaugh—1. Yes. 2. They seem to dislike black.

Chas. Dadant & Son—1. Yes, they will sting black the quickest.

E. France—1. Yes. 2. An old, black wool-hat is the worst thing.

Rev. M. Mahin—1. I have never noticed any difference. 2. I think not.

R. L. Taylor—1. I do not think they are. 2. I have never noticed that they are.

Dr. J. P. H. Brown—1. 'Tis true. 2. Black or bright red are most objectionable.

J. A. Green—1. Yes. Bees frequently show an aversion to black clothing, especially if of a fuzzy nature.

Jas. A. Stone—1. I don't know. 2. They may be by any color they are not in the habit of seeing around the apiary.

C. H. Dibbern—1. Yes, perhaps because they do not see one so easily. 2. I do not think that any color tends to irritate bees.

R. C. Aikin—1. Yes. 2. I do not know that the color particularly irritates, but when angered it surely receives the attacks.

J. E. Pond—1. I have seen such statements, but they are not borne out by my own observation. 2. I do not think they are—why should they be?

E. S. Lovesy—1. It is claimed so, and to some extent I believe it is true, altho with the use of a good smoker I have never noticed any difference.

S. T. Pettit—1. Yes. For 15 years I have dressed in white while handling bees. 2. They don't like any dark color, but black gives the most offence.

A. F. Brown—1. I think so; also that cotton clothing is less objectionable than wool. 2. Dark colors, when in market contrast with light, seem to attract their ire.

O. O. Poppleton—1. I think so. 2. I doubt whether color of any kind irritates bees, but when they are on a lookout for a target they seem to see dark colors first.

D. W. Helse—1. It is. 2. Decidedly so; especially is this true of a black sateen shirt, which has the same effect on the bees' temper as the red flag has on the bull.

Mrs. L. Harrison—1. Yes. 2. I don't know so much about color as texture; they do not sting brown linen, starch; the sting slips over it. Woolly goods would irritate them.

G. W. Demaree—1. I would not wear white clothing in the apiary whether the bees liked it or not. 2. My experience is that bees will give less annoyance "fiddling" in your ears if you will wear a straw hat. They certainly do not like a wool hat.



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7Att

during summer in went a litter of pigs, being the less disagreeable of the two nuisances. I keep only from 10 to 12 colonies. An old dish-pan worn through in the bottom is good to gather pieces of comb and set out for the bees to nibble, and carry away something all the time. After the sun melted part of it, I saw them load their hind legs with wax, the same as pollen. Then after there was not much comb building and honey coming in freely, the bees were not much seen on it, and the hot sun melted it so the wax run through the cracks in the bottom of the pan. Then I took a little fish-pail, put water in it, and set the pan on top with contents, stirred it now and then, and covered it with a pane of glass, and as a result I had a nice lump of wax.

Take two hand-sled runners with slats nailed crosswise, to place by the side of an old colony to set the hive on to make room for the new swarm. It is far ahead of blocks, and when ready to move tie a rope to it and draw to its new place.

The Miller feeder is made half its size, and set crosswise over the frames, then with a 14-section super the other half of the hive is covered, and when the bees begin to work in the sections the feeder is taken off, and, after the honey harvest, put it on again. In cold weather, say at packing time for winter, fill the entrances with burlap.

MICHAEL HAAS.

St. Joseph, Mich.

Put the Bees in All Right.

After a two days' flight our bees were placed in the cellar Nov. 21. Rain set in just as we finished, and the next night came the blizzard and freeze-up. We are all right this time.

F. A. SNELL.

Carroll Co., Ill., Nov. 25.

Tall Sections, Etc.

I got an average crop of honey this year, tho more dark honey than usual, but from the fact that I used the Danzenbaker prize section, 4x5 inches, and being so much better filled and caput out to the wood, I'm getting better prices for it than I ever could get for the best white honey in the old, wide 4x4 sections. No more square sections for me.

I have just returned from quite an extended visit among bee-keepers, and while I am quite an enthusiast on the Golden method of producing comb honey, I was agreeably astonished to find so many bee-keepers talking about and preparing to try this method.

A. S. DALBEY.

Montgomery Co., Md., Nov. 28.

A Young Bee-Keeper.

I have been interested in bees ever since I could know anything about them. The first bees that I owned I found in a tree when I was 11 years of age, but they died the following winter. Then I had no more bees. At 13 years of age my step-mother gave me a strong colony, and they swarmed twice this spring. I bought 2 other colonies the past summer from my cousin. Now I am 14 years of age, and have 5 colonies. It was a poor honey season in this section the past summer.

JULIAN HOLLMAN.

Lexington Co., S. C., Nov. 14.

Poor Country for Bees and Honey.

If I could report a great number of colonies, or a large amount of honey per colony, it would be a pleasure to write; but I must be content to report that I live in a very poor country for bees and honey. The first property I ever owned was a colony of bees in a box-hive; since then I have kept all the way from one to 40 colonies; and 20 pounds of surplus honey per colony is my average yield, except about every five years we have a good honey season; then if we are up and doing, and have our bees strong, we are pretty certain of 50 pounds of surplus honey per colony.

This certainly was an off year, both in



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We have a quantity of finest basswood honey in barrels, weighing 350 pounds and upward, which we will ship f. o. b. Chicago, at 7½ cents a pound. Sample mailed for 8 cents. If desiring to purchase, let us know, and we will write you the exact number of pounds in the barrel or barrels, and hold same till you can send the cash for it by return mail.

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We would suggest that those bee-keepers who did not produce any honey for their home demand the past season, just order some of the above, and sell it. And others, who want to earn some money, can get this honey and work up a demand for it almost anywhere. The Circular, "HONEY AS FOOD," will be a great help in creating customers for honey.

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bees and honey. Cane-mills are, I think, responsible for the loss of bees. When the mills were through work, I found my best colonies contained only enough bees to cover 3 or 4 combs. Langstroth size, and mostly young bees; so I went to work earnestly and got them strong enough for winter, by uniting. I got some partly-filled sections, and a few old combs well filled with honey. I got a nice lot of young bees, and all the brood they can care for these frosty nights.

H. B. LAMBERT.

Sampson Co., Ky., Nov. 15.

The Bee's Length of Vision.

On page 615, the inquiry concerning a bee's length of vision interests me from a scientific point of view. While I am not able to answer the question with authority, the suggestion occurs that this point can be determined somewhat accurately (if it has not already been the subject of investigation by entomologists or other scholars) by micrometric studies of the focal length of a bee's eye.

The eye is a natural lense and subject to certain mathematical laws so far as penetration and absorption of light may be concerned. I infer that bees have the power of vision at considerable distances. Bee-keepers testify that a bee can attack a man more successfully at a distance of 10 feet from the hive than if he stand in immediate juxtaposition. Indubitably every animal is fitted with senses co-ordinate with its needs for existence. Experiments have demonstrated the approximate length of vision in many animals. The cat family is known to see better at some distance than close at hand. Deprived of the sense of smell, a cat will be unable to find a mouse placed immediately under her nose, but she is well prepared to spring upon her prey from a distance and to see it in the dark by means of extraordinary powers of light absorption through dilation of the pupil.

Eagles are said to be very far-sighted, and, in confirmation, instances are cited where they have dropt upon their prey from elevations absolutely beyond the range of human vision. It is reported that tests of the sight of the Andes condor prove that he can see at the distance of 100 miles.

It may be, therefore, quite possible that an all-wise creator has furnished the bee with power to discern objects within the range of its flight. We are all acquainted with her rapidity of flight, compared with her physical size, and we know how she will describe an upward curve to avoid obstacles. To bring into play the necessary muscular movements in doing this, must require considerable (fore)sight, or long-sight.

I would be glad to have some patient searcher after scientific truth tell us what he can find in nature or in the books concerning the sight of bees. **GEO. H. STIPP.**
San Francisco Co., Calif.

The Willowherb or Fireweed.

On page 674, the question is asked by Dr. Mason, "Does the willowherb grow more than one year on the same ground?" To which Dr. Miller answers, "I think it does, but after a time that ground will not produce the willowherb. It does not grow continuously. It grows only for a time on the burnt districts."

The willowherb or fireweed grows from seed scattered by the wind in August. In September the young seedlings make their appearance, which freeze down to the ground in winter. In early spring they start before the fern comes out and keep ahead of that so that in blooming time the fireweed overtops everything else. If the seedling stands in rich ground it blossoms and bears seed that year. If it grows in poor ground it will not bloom. I know of a steep mountain-side where the willowherb grew for three years without a flower, but last summer (the fourth year) it bloomed full, and was rich in nectar.

The plant dies every fall down to the roots. The roots send out in the spring several young shoots. The main root grows

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horizontally, from which grow the shoots, which in time make regular stumps, from which year after year the long stalks grow. The root adds one ring every year, just like a tree. The root also starts to decay in the center first.

The willowherb commences blooming in July; new buds form continually, while the blossoms give way to seed-pods, till a killing frost comes.

I know it grows on the same place for at least 12 years, and perhaps forever, if it is not choked out by other plants, like young trees. It tries its best to grow higher than other plants, as it needs sunshine. I measured one stalk 13 feet high. The evergreen trees, spruce and hemlock, will in length of time, aided by their shade, overtop and kill the fireweed.

To make the seed grow is as hard as to make the seed of sweet clover grow, but the root will grow with me every time.

The nectar gathered from that plant is thin, but quickly ripens in the hive to a good body. It is the mildest honey I know of; is clear white, not a shade of color if pure and very sweet.

I have kept bees for the last six years, and secured honey from the fireweed every year, 1897 excepted. **HERMAN AHLERS.** Clatsop Co., Oreg., Nov. 14.

[The roots which Mr. Ahlers sent us prove his statements regarding the roots of the willowherb or fireweed. No doubt there

are many of our Michigan readers that could give considerable information concerning the rich nectar-yielding plant under consideration.—EDITOR].

Honey as a Food.

I had expected to have heard something of an answer to the question I raised last spring, which was, To what particular extent can honey be called or classed as a food? I gave my belief, but my object was, and is, to draw out the best authority to elucidate this point. I stated then that if honey is to be considered or accepted as a food it could only belong to hydro-carbon elements, but while I had formulated the question—Does honey or any saccharine matter produce fat in the animal system?

Now I know there are some authorities that hold to the positive, and I, as well as many more, hold to the negative side. I do not see why this question would not be a suitable one to write on, and valuable to everybody. While I admit honey is of very great use to the consumer as a health preserver, it needs no change by way of digestion, but enters the circulation and undergoes a fermentive process resolving itself into lactic acid and water, and while this process is going on, heat is evolved, which is of course the great boon involved.

I was much interested in the account given of the Omaha meeting, on page 661,

on the food value of honey, as per Mr. Whitcomb, as he says, "I think we entirely underrate the food value of honey," etc. I consider he is beside himself when he says that one pound of honey is of more value as nutriment than two pounds of pork. Of course, pork—that is, fat pork—is only for the same purpose, to produce heat, but not direct, but is stored up in the animal tissues as fat to be used when needed as a fuel, while honey is made available direct, and does not require the exhaustive powers of nature to change it somewhat and assimilate it. Honey is, therefore, of greater value as a heat-producer, because the process is accomplished with much less effort and taxation of the animal strength, but I would not go so far as to hold with Mr. W. that one pound of honey is more than equal to two pounds of pork.

But let that be as it may, I am surprised at Dr. Miller, that he didn't tell us more on the line I have pointed out. I would feel greatly obliged if he will write out a chapter and enlighten us; there is no doubt he can do it, and I am going to take the liberty to say that there shall be no peace till he redeems this pledge, and many will vote him all the thanks he could possibly ask.

I trust that we have not heard all of this, or the last of it, but will get the real gist of the matter as soon as possible.

C. WURSTER.

Ontario, Canada, Oct. 26.

Not a Big Crop.

Bees are in good winter quarters on the summer stands, with plenty of bees and plenty of ripe stores. My honey crop was 1,800 pounds of comb and extracted from 41 colonies, spring count. This is not a big crop, but it is ripe and of good flavor.

My Alsike clover seed crop is 34 bushels and 18 pounds, from 56 pounds of seed sowed. There was the most honey from Alsike this year.

C. G. MATSON.

Chicago Co., Minn., Nov. 29.

Frame-Spacing; Perforated Separators

I wish to thank Mr. A. P. Raymond for his splendid suggestion for spacing frames, found on page 738. The "wire nail, and V groove in the rabbet," beat staple spacing, or any other, of which I have any knowledge. It disposes of the objection to staples when uncapping, and, also, obviates the danger of marring the comb while lifting the frame from the hive.

I also wish to thank Mr. Pettit for the idea of $\frac{3}{8}$ -inch holes through the separators in the production of comb honey. I experimented the last season with over 100 separators thus perforated, using them on the standard "bee-way" sections, and finer, truer comb I never saw, and without a single exception. They are good enough for me.

WM. M. WHITNEY.

Kankakee Co., Ill.

Nuts for Dr. Miller to Crack.

As it seems there is an expert "nut-cracker" in the bee-fraternity, I wish to send a kernel or two for his hammer.

I had a queen-cell I was watching and waiting for, as it was in a hive of fine bees. I waited till the time for her to emerge had past some days, and she had not yet put in appearance. I opened the end of the cell and found a fully-matured queen, but dead, and some shrunk. I pulled her out, and hanging to her came another complete bee, but very small, like a dwarf.

At first I was somewhat entranced, and more surprised than I can tell; and wonder was greatly enhanced, to find two queens within one cell. But on closer inspection I found it did not look like a queen at all; the wings were as long as the body; just like a worker on a small scale.

Later, in a nucleus hive I had a frame with three nice queen-cells. I placed a wire-cloth cover over two to protect them from the first queen out; the oldest one, too, emerged all right. I took them out

and left the other with the cover over her. A day or so after, I took a look and found her (or it) out of the cell in the comb—not a queen, but a perfect worker, so far as I could see. I thought it strange, and left it a day or two more to see what would develop, but no change came. I then let it go with the bees—there were but few—and I could not tell it from the others, and could never find her (or it) again.

I wish to say right here, this is no "put up job," but facts. I showed the "twin queens" to my wife, and told her I never saw or heard of such a case before. I am sorry I did not send the "plural queens" to Editor York, but did not think of it till I had thrown them away, past finding.

This may sometimes happen, but it is new, and a mystery to me.

Now Dr. Miller may be able to turn the X rays of his experience and wisdom on those cells and solve the puzzle. Tell us "What's the matter with Hannah."

Stephenson Co., Ill.

A. W. HART.

Canning Fruit with Honey.

On page 736 is an enquiry about canning fruit with honey. We have used it two seasons, and like it. We put the fruit into a tight-covered kettle in the oven of the stove, and cook until tender, then add the honey and bring to a boil on top of the stove, and put in cans and seal while boiling hot. Juicy fruit, like peaches, pears and berries, need no water added, as the honey makes enough syrup. Dry fruits, like quinces and apples, need a little water to cook them tender.

We use the best white clover honey for peaches and fruit that is not very sour, $\frac{1}{4}$ pound of honey to a pound of fruit is about right for us; but the best plan is to sweeten to taste. I think the fruit keeps better than that canned in sugar.

I had for my breakfast this morning peaches canned in September, 1897. They were as good as the day they were put in the jars, and we think them much better than fruit put up with sugar. We have put up in honey, apples, blackberries, peaches and quinces. All keep well, and are very fine. We drain the liquid out of the honey that granulates coarse, and use the dry sugared honey for making candy, and in various ways for cooking, etc.

Don't cook the honey in with the fruit.

The less you boil the honey the more of the honey flavor the fruit will have.

"Pa," asks what to do with comb honey. Tell him to keep it in a dry, warm place, the hotter the better, if it doesn't melt the comb; and he can keep it as long as he likes.

E. D. HOWELL.

Orange Co., N. Y., Nov. 26.

Poor Season for Honey.

The past season was a poor one for honey in this part of the State. I commenced with 31 colonies, increased to 58, and secured 1,200 pounds of comb honey. My bees are mostly Italians and hybrids. I know that they work on the red clover bloom, especially during August and September.

Neighbor Herrick should get Italian bees and smaller hives.

G. STOUT.

Hennepin Co., Minn., Nov. 28.

A Report.

I got 800 pounds of honey last year, and 500 this fall. It was mostly sold in the home market at $12\frac{1}{2}$ cents a pound. I have 27 colonies of bees.

MICHAEL LARINAN.

Rock Island Co., Ill., Nov. 28.

Stormy Weather.

The weather was so mild during the forepart of November that I delayed putting my bees into the cellar. Nov. 31 it rained and changed to sleet; the 22nd it snowed; the 23rd and 24th it was as low as six degrees below zero. During the middle of the day (yesterday) it thawed some and I dug the snow away from the hives and scraped off some of the ice from the covers, and intended to put the bees into the cellar to-day, but we are having another snow-storm, so I will wait. I have 25 colonies, and the most of them have an abundance of honey for winter.

JOHN RIDLEY.

Winneshiek Co., Iowa, Nov. 25.

New York.—The tenth annual meeting of the Ontario Co., N. Y., Bee-Keepers' Association will be held in Canandaigua, N. Y., Dec. 8 and 9, 1898. An interesting program is in course of preparation. All interested in bees or bee-keeping are invited to attend.

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MARKET QUOTATIONS.

Chicago, Nov. 19.—Our market is very strong at 13c for best grades of white comb honey, with good No. 1 at 11 to 12c; ambers range from 8 to 11c, according to appearance, quality and flavor. Extra ted, white, 6 to 7c; amber, 5 to 6c; dark, 5c. Beeswax, 27c. All grades and kinds of honey are saleable at this time.

R. A. BURNETT & Co.

St. Louis, Sept. 9.—Fancy white comb, 12 to 12 $\frac{1}{2}$ c; A No. 1 white, 10 to 11c; No. 1 white, 9 to 10c; dark and partially filled from 5 to 8c, as to quality. Extracted in cases, No. 1 white, 6 to 6 $\frac{1}{2}$ c; No. 2, 5 $\frac{1}{2}$ c; amber, 5c; in barrels, No. 1 white, 5 $\frac{1}{2}$ c; amber, 4 $\frac{1}{2}$ to 5c; dark, 4 to 4 $\frac{1}{2}$ c. Choice Beeswax, prime, 34c; choice, 24 $\frac{1}{2}$ c. At present there is a good demand for honey.

WESTCOTT COM. CO.

Kansas City, Sept. 9.—Fancy white comb, 12@13c; No. 1, 11@12c; amber, 10@11c. Extracted, white, 5 $\frac{1}{2}$ @6c; amber, 5@5 $\frac{1}{2}$ c; dark, 4 $\frac{1}{2}$ @5c. Beeswax, 22@25c.

The receipts of comb honey are larger.

O. C. CLEMONS & Co.

Indianapolis, Oct. 3.—Fancy white comb honey, 12 to 12 $\frac{1}{2}$ c; No. 1, 10 to 11c. Demand fairly good. Tar-colored comb honey, 8 to 9c, with almost no demand. Clover and basswood extracted honey, 6 $\frac{1}{2}$ to 7c. Beeswax, 25 to 27c.

WALTER S. POWDER.

Milwaukee, Oct. 18.—Fancy 1 pound, 12 $\frac{1}{2}$ to 13c; A No. 1, 12 to 12 $\frac{1}{2}$ c; No. 1, 11 to 12c; No. 2, 10 to 10 $\frac{1}{2}$ c; mixt, amber and dark, 8 to 9c. Extracted, white, in barrels, kegs and pails, 6 $\frac{1}{2}$ to 7c; dark, 5 to 5 $\frac{1}{2}$ c. Beeswax, 28 to 27c.

This market is in good condition for the best grades of honey, either comb or extracted. The receipts of the new crop are very fair, and some of very nice quality. The demand has been and continues to be very good, and values are firm on fancy grades and straight, uniform packing.

A. V. BISHOP & Co.

Columbus, O., Nov. 18.—Market somewhat easier. Quote: Fancy, 14c; No. 1, 12c; No. 2, 10c; amber, 9c; buckwheat, 8c.

COLUMBUS COM. AND STORAGE CO.

New York, Oct. 22.—Receipts of comb honey are large, and there is quite a stock now on the market. While white is in good demand, buckwheat and mixt seem to be somewhat neglected, and quotation prices have to be shaded in order to sell in quantity lots. We quote:

Fancy white, 13 to 14c; No. 1 white, 11 to 12c; amber, 10c; mixt and buckwheat, 8 to 9c. Stocks of extracted are light of all kinds. Demand is good at following prices: White, 6 to 6 $\frac{1}{2}$ c; amber, 5 $\frac{1}{2}$ c; dark, 5c. Southern, in half barrels and barrels at from 55c to 60c a gallon. Beeswax dull at 26c.

HILDRETH BROS. & SEGELKEN.

Detroit, Oct. 20.—Honey in better demand and better prices as follows: Fancy white, 13@14c; No. 1, 12@13c; fancy dark and amber, 10@11c. Extracted, white, 6@7c; dark, 5@5 $\frac{1}{2}$ c. Beeswax, 25@26c.

M. H. HUNT.

Buffalo, Nov. 25.—A most excellent demand continues for strictly fancy 1-pound combs at 13 to 14c. The usual so-called No. 1, 11 to 12c; lower grades move well at from 9c down to 7c; stocks very light in our market. Extracted honey, 5 to 6c. Beeswax, 24 to 28c.

BATTENSON & CO.

San Francisco, Nov. 22.—White comb, 9 $\frac{1}{2}$ to 10 $\frac{1}{2}$ c; amber, 7 $\frac{1}{2}$ to 9c. Extracted, white, 7 to 7 $\frac{1}{2}$ c; light amber, 6 $\frac{1}{2}$ to 6 $\frac{1}{2}$ c. Beeswax, 24@27c.

Stocks in this center are light and must so continue through the balance of the season. Choice extracted is especially in limited supply and is being held at comparatively fancy figures. Comb is meeting with very fair trade, considering that it has to depend mainly on local custom for an outlet. Values for all descriptions tend in favor of selling interest.

Boston, Nov. 28.—Liberal receipts with but a light demand during the holidays. As a result stocks have accumulated somewhat, and prices show a lowering tendency, still we hope for a better demand with prices at present as follows:

Fancy white, 14c; A No. 1 white, 12 $\frac{1}{2}$ to 13c; No. 1, 11 to 12c; light amber, 10c, with no call for dark. Extracted, fair demand, light supply: White, 7 to 7 $\frac{1}{2}$ c; light amber, 6 $\frac{1}{2}$ to 7c; Southern, 5 to 6c.

BLAKE SCOTT & LEE.

Cleveland, Nov. 29.—Fancy white, 13@14c; No. 1 white, 12@13c; A No. 1 amber, 10@11c; No. 2 amber, 9@10c; buckwheat, 8c. Extracted, white, 7c; amber, 6c; buckwheat, 5c.

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The accompanying cut gives a faint idea, but cannot fully convey an exact representation of this beautiful knife, as the "Novelty" must be seen to be appreciated.

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